

Correlation methods of determining ... S/024/62/000/002/004/012
E140/E135

to the case where a number of different perturbations are taken into account. This is equivalent to a passage from "macrostructural" to "microstructural" considerations. Three general cases are considered: 1) each of the outputs is independent of the others; 2) the outputs are mutually dependent, i.e. each of them can be determined from some one of the others; 3) the outputs are correlated. The analysis indicates that the disturbing factors may be classified in two groups. In one of these are classed such factors as tool wear, temperature variations, positional tolerances, voltage, velocity, feed or cutting depth, etc. In the second group are such factors as the influence of tolerances, gauges and dimensions of semi-finished products, surface hardness, evenness, uniformity, etc. The analysis of the first group of factors leads to the definition of the methods of automatic control and measurement, the second group to the definition of the technical conditions to be satisfied by the material entering the line. A brief treatment of nonlinear regression, where the dispersions need not be constant, is then given.

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The method proposed breaks down in these cases and substantial errors may result. It is therefore necessary to verify the assumptions (of linearity and delta-correlation) carefully. Where necessary standard methods may be applied for the nonlinear case. The article closes with the examination of technical-economic considerations, illustrated by the example of final centreless grinding of the outer circumference of the outer race of a roller bearing. Numerical tables and graphs are given, showing the empirical and theoretical regression lines of the process. There are 4 figures and 1 table.

SUBMITTED: November 4, 1961

Card 3/3

L 12252-63

S/271/63/000/004/018/045

AUTHOR: Raybman, N. S.

44

TITLE: Correlation methods for determining the approximate characteristics of automatic lines

PERIODICAL: Referativnyy zhurnal, Avtomatika, telemekhanika i vychislitel'naya tekhnika, no. 4, 1963, 45, abstract 4A281 (Tr. VI Vses. soveshchaniya po toerii veroyatnostey i matem. statistike, 1960; Vil'nyus, Gos. izd-vo polit. i nauchn. lit. LitSSR, 1962, 245-250)

TEXT: The author examines the correlation method for determining approximate characteristics for the accuracy of the process at outputs of automatic lines (mathematical expectations and dispersions) according to the accuracy characteristics at their inputs; also for determining certain characteristics of the same process at its input and output. The above-indicated characteristics are determined at the beginning for one of the operations of automatic lines; then for the case of an automatic line consisting of n processing operations. It is assumed that the regression between the inputs and outputs is linear, while the dispersions at the outputs in the case of constant inputs are themselves constant. The author examines

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S/271/63/000⁰/004/018/045

Correlation methods for determining

the case of curvilinear regressions by using piece-linearization of such regressions. He adduces equations for optimal dispersions, obtained from relationships joining the dispersions with cost values. To derive the formulas he makes use of the method of finding the conditional extremum of Lagrange. There are two illustrations and a bibliography of 9 items. I. P.

[Abstracter's note: Complete translation]

Card 2/2

RAYEVSKIY, S.Ya. (Moskva); RAYBMAN, N.S. (Moskva)

Statistical method for determining unknown multidimensional
operators of automatic control objects in almost linear
approximation. Avtom. i telem. 23 no.7:918-925 J1 '62.
(MIRA 15:9)

(Automatic control)

BALAKSHIN, O.B., kand. tekhn. nauk; BYKHOVSKIY, M.L., prof., doktor tekhn. nauk; VOLODIN, Ye.I., kand. tekhn. nauk; GRIGOR'YEV, I.A., kand. tekhn.nauk; DRAUDIN-KRYLENKO, A.T., inzh.; IVANOV, A.G., kand. tekhn.nauk; KOZLOV, M.P., kand. tekhn. nauk; KOROTKOV, V.P., prof.; KOCHENOV, M.I., kand. tekhn.nauk; KUTAY, A.K., kand. tekhn. nauk; MARKOV N.N.,kand. tekhn. nauk; PALEY, M.A., inzh.; ~~RAYEMAN~~ N.S., kand. tekhn.nauk; ROSTOVYKH, A.Ya., kand. tekhn. nauk; ROMYANISEV, A.V., kand. tekhn.nauk; SARKIN, I.G., prof.; SMIRNOV, A.S., inzh.; TAYTS, B.A., prof., doktor tekhn. nauk; YAKUSHEV, A.I., prof., doktor tekhn. nauk; NESTEROV, V.D., inzh., nauchnyy red.; CHUDOV, V.A., inzh., nauchnyy red.; GAVPILOV, A.N., doktor tekhn.nauk, prof., red.; BLAGOSKLONOVA, N.Yu., inzh., red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Manufacture of instruments and means of automatic control: a manual in five volumes] Priborostroenie i sredstva avtomatiki; spravochnik v piati tomakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.1.[Interchangeability and engineering measurements] Vzaimozameniaemost' i tekhnicheskije izmereniia. 1963. 568 p. (MIRA 16:8)

(Electronic measurements) (Automatic control)

RAYBMAN, N.S. (Moskva)

Measure of certainty and prediction accuracy in determining the characteristics of complex automated systems using statistical methods. Avtom. i telem. 24 no.9:1236-1249 S '63. (MIRA 16:9)
(Electronic industries—Quality control) (Automatic control)

RAYBMAN, N.S. (Moskva)

Statistical methods for determining the dynamic characteristics
of continuous lines. Izv. AN SSSR. Tekh. kib. no. 1173-184
S-0 '64. (MIRA 17:12)

L 44741-56 — EWT(d)/EWP(x)/EWP(h)/T/EWP(1)/EWP(r) — Pf-4 — IJP(5)
 S/0103/65/026/003/0500/0509 31
 ACCESSION NR: AP5008323 B
 AUTHOR: Raybman, N. S. (Moscow); Terekhin, A. T. (Moscow)
 TITLE: Dispersion methods of random functions and their use in investigating the
 nonlinear plant 16
 SOURCE: Avtomatika i telemekhanika, v. 26, no. 3, 1965, 500-509
 TOPIC TAGS: automatic control, automatic control design, automatic control system,
 automatic control theory M
 ABSTRACT: Definitions of self-dispersion, mutual-dispersion, and normalized
 functions are given, and their properties are considered. Formulas for the disper-
 sion functions of the Gaussian normal process, Wiener process, and Poisson process
 are derived. A concept of the "degree of nonlinearity" of a controlled plant is
 introduced and evaluated in terms of dispersion and correlation functions; a
 general formula (3.6) for the degree of nonlinearity is offered, as well as
 formulas (3.11 and 3.12) for squaring and cubing plants. Orig. art. has: 90 formulas.
 ASSOCIATION: none
 SUBMITTED: 11Sep64 ENCL: 00 SUB CODE: IE, DP
 Card 1/1 NO REF SOV: 009 OTHER: 002

CHELYUSTKIN, A.B., red.; ITSKOVICH, E.L., red.; FLISKIN, L.G.,
red.; RAYMAN, N.S., red.; GERNYSHEV, V.N., red.;
VOLKOV, V.L., red.; CHADEYEV, V.M., red.

[Automatic operational control of production processes;
transactions] Avtomaticheskoe operativnoe upravlenie pro-
izvodstvennymi protsessami, troy. Moskva, Nauka, 1965.
244 p. (MIRA 18:11)

1. Vsesoyuznaya konferentsiya po avtomaticheskoi opera-
tivnomu upravleniyu proizvodstvennymi predpriyatiyami. Ist.
Moscow, 1963.

RAYBMAN, N.S., kand. tekhn. nauk

Conference on the use of mathematical statistics held in
Czechoslovakia. Vest. AN SSSR 35 no.9:90 '65. (MIRA 18:9)

RAYBMAN, N.S.

International Conference on the Statistical Methods of Analysis,
Control, and Regulation of Metallurgical Processes. Zav.lab. 29 no.2:
252-253 '63. (MIRA 16:5)
(Metallurgy--Congresses)

RAYMAN, N.S., kand. tekhn. nauk, dotsent; TUROVA, V.M., inzh.;
VASIL'YEVA, R.S., inzh.

Using correlation methods in calculating basic dimensions
for tearing ring billets. Vest. mashinostr. 44 no. 2:35-39
P. 164. (MIRA 17:7)

KATS, G.S.; RAYBMAN, S.I.; GOREVICH, A.D.

Unusual course of cancer of the splenic flexure of the colon.
Vop. onk. 11 no.8:103-104 '65. (MIRA 18:11)

1. Iz khirurgicheskoy kliniki II Moskovskogo meditsinskogo
instituta i gorodskoy klinicheskoy bol'nitsy No.13 (nauchnyy
rukovoditel' - prof. V.A.Ivanov; glavnyy vrach - M.B.Shansheyn).

RAYBOV, B.P.; STELENKO, V.I., and. tekhn. nauk

Automatic production of rubberized cord. Avtom. i prib. no.2:7-9
Ap-Je '63. (MIRA 18:8)

1. Institut avtomatiki Gosplana UkrSSR.

1. RAYBON, G. Z.
2. USSR (600)
4. Grombakh, Vladimir Anisimovich, 1872-1952
7. In memory of Vladimir Anisimovich Grombakh. Zhur. nevr. i psikh. 52 no. 12 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

RATOV, B.N.

Over-all automation of assembly operations in mass production.
Bibl. tekhn.-ekon. inform. Gos. nauch.-issl. inst. nauch. i
tekhn. inform. 17 no.6:97-100 Ia '64.

(MIRA 17:11)

I. 35354-66 ENF(m)

ACC NR: AR6017802

SOURCE CODE: UR/0058/66/000/001/A060/A060

AUTHOR: Markov, K. P.; Raybov, N. V.; Stas', K. N.

TITLE: Method for continuously monitoring the value of the "latent energy"

SOURCE: Ref. zh. Fizika, Abs. 1A515

REF SOURCE: Tr. Soyuzn. n.-i. in-ta priborostr., vyp. 2, 1965, 93-105

TOPIC TAGS: air pollution control, radioactive contamination, radiobiological instrumentation, radon

ABSTRACT: The possibility is considered of producing an instrument for continuously monitoring the value of the "latent energy" E_{α} , which characterizes the degree of radiation danger due to the presence of Rn daughter products in the air. A mathematical investigation is made of the method of continuous motion of a filtering tape relative to the superimposed and separated placement of the inlet port and of the detector. It is stated that the use of a continuously moving filter tape and of an inlet-port position separate from that of the detector make it possible to monitor the presence of daughter products of Rn in air by determining the value of the "latent energy" E_{α} with sufficient accuracy. It is reported that the use of the described method makes possible measurement of E_{α} in the range $6.5 \times 10^2 - 6.5 \times 10^5$ Mev/l with approximate accuracy $\pm 20\%$. A. Lebedev. [Translation of abstract]

SUB CODE: 18 , 06

Card 1/1

RAYBSHTEYN, V.A.

Problem of regional cerebral hypertension. Report No.1: Comparison
of data from palpation and mechanocardiographic methods. Zhur. nevr.
i psikh. 62 no.1:28-31 '62. (MIRA 15:4)

1. Nauchnyy rukovoditel - prof. A.I.Zlatoverov.
(CEREBROVASCULAR DISEASES) (CARDIOGRAPHY)
(PALPATION) (HYPERTENSION)

RAYBSMAN, N.S. (Moskva)

Correlation methods for determining the approximate characteristics
of automatic lines. Izv. AN SSSR. Otd. tekhn. nauk Energ. i avtom
no.1:110-123 Ja-P '61. (MIRA 14:3)
(Automatic control)

RAYBURD, S.M.; RODIVILOVA, L.A.; VLASOVA, K.M.; SHABADASH, A.N.; IGONIE, A.A.

Study of the solidification of methylel polyanide resins. Plast.
massy no.7:20-22 '60. (MIRA 13:10)
(Resins, Synthetic) (Polyamides)

85113

S/191/60/000/007/006/015
B004/B056

158107

AUTHORS:

Rayburd, S. M., Rodivilova, L. A., Vlasova, K. N.,
Shabadash, A. N., Igonin, A. A.

TITLE:

Investigation of the Hardening Process of Methylol Polyamide
Resins

PERIODICAL: Plasticheskiye massy, 1960, No. 7, pp. 20 - 22

TEXT: In Ref. 2, the authors supposed that the hardening of methylol polyamides takes place by the formation of ether cross links ($\text{CH}_2\text{-O-CH}_2$) or methylene cross links ($\text{N-NH}_2\text{-N}$). The present paper gives a report on the spectral-analytical investigation of the hardening process. The following substances were used: polyamide resin of the type 54/10 (molecular weight 25,000) obtained by polycondensation of caprolactam with AC^{P} (AG-) salt, further MPL-20 (MPL-20) and AMP (AMP) methylol polyamides of the type PFE-2/10 (PFE-2/10), obtained by treatment of polyamide resin 54/10 with paraform in ethanol or benzyl alcohol. Structure, content of methylol and methoxyl groups, and solubility are given in a table.

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85113

Investigation of the Hardening Process of
Methylol Polyamide Resins

S/191/60/000/007/006/015
B004/B056

Figs. 1,2 show the infrared spectra within the range $2800 - 3300 \text{ cm}^{-1}$ and $1000 - 1300 \text{ cm}^{-1}$ before and after hardening (30 hours heating to 150°C) of the resins, which were recorded by means of a WKC-11 (IKS-11) recording spectrometer. The absorption bands are discussed. After 30 hours of hardening, the IR-spectra of the various resins were rather similar to one another. The bands of the methylol- and ether groups ($1000 - 1100 \text{ cm}^{-1}$) vanished during heating; no bands characteristic of the $\text{CH}_2\text{-O-CH}_2$ groups occurred. Therefore, cross linking took place by the formation of methylene bonds. The authors mention a paper by D. N. Shigorin. There are 2 figures, 1 table, and 6 references: 5 Soviet and 1 US.

Card 2/2

RAY CHAUDHURI D. Institute of Biochemistry, Univ. of Budapest Studies on the curves of fibrinogen and clotted fibrinogen Hungarica Acta Physiologica 1948, 1/6 (238-247) Graphs 5 Tables 3.

The titration curve of fibrinogen is not greatly affected by the presence of urea. The curves given by fibrinogen and fibrin in urea solution are similar, but the fibrin solutions are slightly more acid than those of fibrinogen. This acid shift is more marked in presence of formaldehyde. These results support the view of Nanninga that clotting of fibrinogen is accompanied by loss of amino groups, which are believed to be the ϵ -amino groups of lysine.

C. A. Mawson - Reading

SO: Physiology Biochemistry and Pharmacology. Section II, Vol. 2, No. 9.

RAYCHENBACH, M. O.; YAROVA, Ye. I.

"The Studies on Cancerolytic Properties of Blood Plasma in Conditions
of Overstraining the Central Nervous System in Mice"

Arkhir Patologii, 15;50-55, 1953, USSR

abs

B-80127, 2 Nov 54

RAYCHENKO, A. I. Cand Tech Sci -- (diss) "Study of the process of homogenization and kinetics of formation of certain physical properties during the clinkering of two-component ^{powder} compounds." Kiev, 1958. 18 pp including cover, with graphs (Min of Higher Education UkSSR. Kiev Order of Lenin Polytechnic Inst), 125 copies (KL, 52-58, 103)

SOV/137-59-4-7981

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 4, p 90 (USSR)

AUTHOR: Raychenko, A.I.

TITLE: On the Problem of Determining the Distribution Over Concentrations of Alloys of Dissimilar Metal Powders 18

PERIODICAL: Ukr. fiz. zh. 1958, Nr 3, pp 408 - 418 (Ukr. Russian and English résumé)

ABSTRACT: The author uses a diffusion equation obtained previously for a model of two-component powdery substance of arbitrary concentration (A.I. Raychenko, I.M. Fedorchenko, Problems of Powder Metallurgy and Strength of Materials, 6 Published by AS UkrSSR, 1958, pp 3 - 18). He calculates the distribution over concentrations (histograms of distribution) as a function of the degree of mutual diffusion. A comparison with experimental data on magnetic analysis of Cu-Ni powdery alloys (RZhMet, 1956, Nr 6, 5289) revealed the qualitative agreement of experimental and theoretical results. The author also describes in detail the experimental part of the study dealing with the plotting of histograms on the basis of X-ray analyses of Co + 20% Ni specimens. The specimens were sintered at 950°C

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SOV/137-59-4-7981

On the Problem of Determining the Distribution Over Concentrations of Alloys of
Dissimilar Metal Powders

up to ~ 9 hours. Similar and different features were noted between experimental and theoretical data. Non-perfect mixing and porosity retarded the homogenization process as compared to the theoretically predicted data. The author discusses the nature of histograms, the limited applicability of the used model and the roentgenological method of plotting histograms.

R.A.

Card 2/2

RAYCHENKO, A.I.; FEDORCHENKO, I.M.

Homogenisation during the sintering of powder metals with
unlimited mutual solubility. Vop.por.met.i prochn.mat.
no.6:3-18 '58. (MIRA 13:4)
(Powder metallurgy) (Solutions, Solid)

SOV-21-58-8-8/27

AUTHORS: Raychenko, A.I. and Fedorchenko, I.M., Member-Correspondent
of the AS UkrSSR

TITLE: On the Problem of Intrinsic Induction of Two-Component Metallo-
ceramic Alloys (K voprosu o vnutrenney induktsii dvukhkomp-
nentykh metallokeramicheskikh splavov)

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1958. Nr 8.
pp 835-837 (USSR)

ABSTRACT: In previous works no attempts to estimate quantitatively the
intrinsic saturation induction $B_s = 4\pi I_s$ of two-component
metalloceramic alloys (I_s is magnetization of saturation) have
been made. However, the knowledge of concentration distribution
of an alloy makes it possible to estimate quantitatively any
additive property, provided that the dependence of this pro-
perty on concentration is known. The authors propose a method
for estimating the intrinsic saturation induction of metallo-
ceramic alloys made of metals with complete mutual solubility.
The calculation may be carried out for an alloy of arbitrary
average concentration for any degree of sintering. The dis-

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SOV-21-58-8-8/27

. On the Problem of Intrinsic Induction of Two-Component Metalloceramic Alloys

tribution by concentrations for the given degree of sintering (Ref. 1) and the dependence of the induction on the concentration (Ref. 2) are employed in this calculation. Results of experimental investigations confirm that the theoretical estimates are reasonable. This method of calculation can be applied to any additive property. There are 2 graphs and 3 references, 2 of which are Soviet and 1 German.

ASSOCIATION: Institut metallokeramiki i spetsstavlavov AN UkrSSR (Institute of Metalloceramics and Special Alloys of the AS UkrSSR)

SUBMITTED: April 2, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

1. Ceramic materials--Theory
2. Ceramic materials--Induction heating
3. Mathematics--Applications

Card 2/2

RAYCHENKO, A.I.

Conference on the theory of pressing and sintering powder metal alloys.
Dop. AN URSR no.8:1135 '60. (MIRA 13:9)
(Powder metallurgy)

11600

1045 1521 1555

28696

S/021/60/000/012/004/006

D251/D302

AUTHORS: Ohorodnykov, V.V., Fedorchenko, I.M., Corresponding Member AS UkrSSR, and Raychenko, A.I.

TITLE: Investigating certain properties of sintered Cu-Ni briquettes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 12, 1960, 1603-1607

TEXT: A series of experiments was carried out to compare the properties of briquettes of sintered Cu-Ni powders formed from various types of powders: a) Mixtures of copper and nickel powders in the following proportions 80% Cu - 20% Ni and 60% Cu - 40% Ni; b) Powder of cupro-nickel alloys of the same proportional composition; c) Pure copper powder. Sintering was carried out at a temperature of 950°C in an anhydrous medium. The sintering time varied from 15 to 240 minutes. The variation in electrical conductivity with sintering time is given, as is, for compari-

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S/021/60/000/012/004/006

D251/D302

Investigating certain properties ...

son's sake. I. Odelevs'ky's equation for a two-phase mixture

$$\lambda_{\text{OYM}} = \frac{(\theta_1 - 1)\lambda_1 + (\theta_2 - 1)\lambda_2}{4} + \sqrt{\frac{(\theta_1 - 1)\lambda_1 + (\theta_2 - 1)\lambda_2}{16} + \frac{\lambda_1\lambda_2}{2}} \quad (1)$$

where $\lambda_{\text{OYM}} = \lambda_{\text{mix}}$ is the conductivity of the components, and θ_1, θ_2 the porosity of the components. It was also found that the shrinkage process is more rapid in the case of alloy powders than in the case of mixtures of the same concentration, and that the strength of briquettes from alloy powders is greater than that of briquettes from mixtures. The variation of concentration on sintering powder-mixture briquettes due to inter-diffusion of copper and nickel may be found from the magnitude of the conductivity with zero porosity which makes it possible to obtain an exact

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28696

S/021/60/000/012/004/006

Investigating certain properties ... D251/D302

chart of the course of the homogenization process. There are 4 figures and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: R.S. Barnes, Phil. Mag., 43, 7, Series 1221 (1952); C.G. Smithells, Metals Ref. Book, 11, London, 1955.

ASSOCIATION: Instytut metalokeramiky i spetsplaviv AN USSR
(Institute of Metallo-ceramics and Special Alloys
AS UkrSSR)

SUBMITTED: March 18, 1960

Card 3/3

S/126/60/009/06/003/025

E073/E335

AUTHORS: Raychenko, A.I. and Fedorchenko, I.M.

TITLE: On Calculating the Electric Conductivity²¹ of Two-component Cermets ✓

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 6, pp 815 -- 822 (USSR)

ABSTRACT: Rhines and Colton (Ref 1) made an attempt to compute theoretically the electric resistance of a mixed sinter alloy as a function of the conditions of sintering. In their attempt, the authors did not choose correctly the model of conductivity of the binary nonhomogeneous alloy; they assumed that the current would flow only through the double pyramid (Figure 1), although the medium surrounding it is as good a conductor as is the pyramid. Furthermore, the authors dealt only with the particular 50-50 concentration. The authors of this paper attempted to solve the problem of quantitative evaluation of the conductivity of substances produced by powder-metallurgy methods, taking fully into consideration the mutual solubility, based on an earlier described model (Ref 2) of a two-component powder body, and a concentration

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✓B

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E073/E335

On Calculating the Electric Conductivity of Two-component Cermets

distribution corresponding to the one obtained theoretically and experimentally in earlier work (Ref 3). By solving the diffusion equations for the model of a two-component powder body (Ref 2) and the the concentrational distributions, the authors have succeeded in evaluating the electrical conductivity of a powder alloy made of two metals which are fully soluble in each other. It is shown that the results of theoretical calculations are in good agreement with experimental results obtained for Cu-Ni alloys with various Cu (80 - 40%) and Ni (20 - 60%) contents. The ideas expressed by the authors permit investigating the influence of surface and volume phenomena during sintering, evaluating the degree of correctness of applied concentrational distributions and determining the influence of the origin of the powders on increases in the value of the diffusion coefficient. Acknowledgments are expressed to Yu.B. Blagoveshchenskiy and his team for the analytical solution of the system of equations by means of a computer of the Computing Centre of the Ac.Sc., Ukrainian SSR.

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VB

S/126/60/009/06/003/025

EO73/E335

On Calculating the Electric Conductivity of Two-component Cermets

There are 7 figures, 1 table and 10 references, 8 of which are Soviet and 2 English.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov
AN USSR (Institute of Cermets and Special
Alloys of the Ac.Sc. Ukrainian SSR)

SUBMITTED: July 22, 1959 - originally;
January 23, 1960 - after revision.

Card 3/3

✓B

32785

S/137/61/000/012/058/149

A006/A101

15 2400

1521

AUTHOR: Raychenko, A.I.

TITLE: A method of plotting concentration distributions of bi-component cermet alloys

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 44, abstract 120312 ("Poroshk. metallurgiya", 1961, no. 2, 35-47, Engl. summary)

TEXT: A new method is suggested for the theoretical plotting of concentration distributions, i.e. the collection of portions of a non-homogeneous solution, arising during the sintering of powder mixtures from components with full mutual solubility. This method, unlike to that suggested previously, (RZhMet, 1959, no. 4, 7981) does not require complicated calculations which are connected with the summation of triple series. The method is based on single-particle approximation, - namely, a single arbitrary particle is analyzed, and all the surrounding particles are replaced by an alloy of medium concentration. For this case an expression is obtained for the concentration of the alloy at any point and instant

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S/137/61/000/012/058/149

A006/A101

A method of plotting concentration ...

of time. This solution was tabulated in "reduced" coordinates. An example is analyzed for plotting the concentration distribution of the sintered Cu +20% Ni alloy. There are 12 references.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 2/2

S/137/62/000/001/053/237
A060/A101

AUTHOR: Raychenko, A. I.

TITLE: On the diffusion volume growth of mixed powder bodies

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 38, abstract 1G287
("Poroshk. metallurgiya", 1961, no. 1, 36 - 42 [English summary])

TEXT: A previously proposed method of quantitative estimation of the diffusion volume growth occurring in the course of annealing 2-component bodies as result of the Kirnandall effect, is made more exact. (Ref. Zhurn. Met., 1960, no. 11, 26013). The considerations developed are verified on the Cu-Ni system. The agreement of theoretical and experimental data was improved, but a discrepancy by a factor of approximately 2 is observed in the case of short sinterings.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

RAYCHENKO, A.I.; SKOROKHOD, V.V.

Theory of shrinkage in the initial period of sintering. Porosh.
met. no.4:3-8 J1-Ag '61. (MIRA 16:5)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Sintering) (Porosity)

1.1600

S/126/61/011²⁴⁴⁷⁶/006/002/011
E193/E483

AUTHOR: Raychenko, A.I.

TITLE: Study of interdiffusion in powder mixtures with the aid of concentration distributions

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.6, pp.870-877

TEXT: Certain physical properties of heterogeneous alloys are more readily evaluated if the concentration distribution of the components is known. This characteristic can be determined either experimentally or analytically, and the object of the present investigation was to compare the results obtained by these two methods in the case of binary powder mixtures. Referring to the investigation, carried out by P.J.Selwood and Jane Nash (Ref.3: Trans. ASM, 1945, 35, 609) who had studied the concentration distribution in sintered Cu-Ni alloys, the present author asserts that these workers had misinterpreted their results (thermo-magnetic curves), since they had assumed that the decrease in the intensity of magnetization of the alloys studied at progressively higher temperatures was caused only by the fact that the Curie points of a series of alloys were below the corresponding test

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Study of interdiffusion ...

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S/126/61/011/006/002/011
E193/E483

temperature, disregarding the decrease in the intensity of magnetization of all the remaining alloys with the Curie points above a particular test temperature. Consequently, although the histograms reproduced in the present paper are based on the thermomagnetic curves, obtained by Selwood and Nash, they have been constructed with the aid of a magnetic analysis method suggested by W. Gerlach (Ref. 6: Zs. Metallkunde, 1949, 40, 281). Since the analytical method of determining the concentration distribution, developed earlier by the present author (Ref. 7: Ukr. fiz. zhurnal, 1958, No. 3, 408), is laborious, the bulk of the present paper is devoted to a detailed description of a new simplified method which has been developed with the aid of the mathematical theory of diffusion, applied to a pore-free model of a static, binary mixture of isometric and isodiametrical powders. The results obtained by this method are illustrated in Fig. 1 and 5. Fig. 1 shows three histograms of the concentration distribution (where ∇ denotes volume % of the alloy) of the concentration distribution in a 90% Ni + 10% Cu powder mixture (particle size: mesh 300), sintered for 18.5 hours at 500°C; histogram (a) was constructed on the basis Card 2/

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S/126/61/011/006/002/011
E193/E483

Study of interdiffusion ...

of the thermo-magnetic curves obtained by Selwood and Nash, the following values of the Curie points having been taken: 600, 550, 500, 450, 400, 350 and 300°K for the alloys containing 5, 10, 15, 20, 25, 30 and 35% Cu respectively. In constructing histogram (6) the corresponding Curie points were taken to be at 550, 530, 480, 430, 380, 330 and 280°K. Finally, histogram (6) was constructed by the analytical method described in the present paper. Similarly, histogram (a) in Fig.5 which shows the concentration distribution in a 70% Ni - 30% Cu powder (mesh 300) mixture, sintered for 2 hours at 550°C, was constructed from experimental data (the Curie points for various alloys having been taken the same as histogram (6) in Fig.1); the analytically determined concentration distribution in this alloy is illustrated by the histogram (6) in Fig.5 (blocks indicated by broken lines denote the proportion and the average composition of the non-magnetic part of the alloy). The main difference between the experimental and analytical histograms was that the former showed the alloy studied to be more homogeneous. O.S.Vdovichenko and G.F.Belitska assisted with the analytical work. There are 5 figures and 11 references: 5 Soviet-Card 3/1

X

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Study of interdiffusion ...

S/126/61/011/006/002/011
E193/E483

bloc and 6 non-Soviet-bloc. The three references to English language publications read as follows: Selwood P.W., Jane Nash, Trans. ASM, 1945, 35, 609; Rhines F.N., Colton R.A., Powder Metallurgy, ed. by J.Wulff, Cleveland, 1942; Smithells C.J., Metals Reference Book, 2, London, 1955.

ASSOCIATION: Institut metallokeramiki spetsial'nykh splavov
AN UkrSSR (Institute of Powder Metallurgy of Special Alloys AS UkrSSR)

SUBMITTED: June 3, 1960 (initially)
January 12, 1961 (after revision)

Card 4/9

11600

31056

S/126/61/012/004/017/021

E193/E383

AUTHOR: Raychenko, A.I.

TITLE: Application of concentration distributions for calculating physical properties of (sintered) powder alloys

PERIODICAL: Fizika metallov i metallovedeniye, v. 12, no. 4, 1961, 615 - 617

TEXT: In an earlier paper (Ref. 1 - FMM, 1961, 11, 870) a new method was proposed by the present author of analytical determination of concentration distribution in binary, sintered powder systems. The validity and accuracy of this method (applicable in the range of homogeneous solid solutions only) were confirmed by experiment. To obtain additional proof of the adequacy of this method the concentration distributions calculated with its aid were used to calculate some physical properties of sintered metal powders and to compare the results with experimental data. The latter included the time-dependence of the internal saturation induction (Ref. 2 - the author and I.M. Fedorchenko - DAN URSR, 1958, no. 8, 835) and Card 1/166

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S/126/61/012/004/017/021

E193/E383

Application of

electrical conductivity (Ref. 3 - ibid - FMM, 1960, 9, no. 6, 815) of ^{the} sintered-powder alloy subjected to isothermal treatment. The calculations were carried out in the following manner. From the known experimental conditions the values of factor γ , corresponding to various times of isothermal treatment, t , were calculated from the formula:

$$\gamma = (4Dt/R^2)^{1/2} \quad (1),$$

where D is the diffusion coefficient and R the particle radius.

In this calculation the following simplifying assumptions were made: 1) the diffusion process is characterized not by two partial coefficients but by a single coefficient; 2) the diffusion coefficient is time- and concentration-independent and, in the case under consideration (Cu-Ni system, annealing temperature of 950 °C), is equal to $2.1 \times 10^{-10} \text{ cm}^2 \text{ sec}^{-1}$.

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E193/E383

Application of

For each value of τ the concentration distributions were determined for two values of the histogram steps: $\Delta c = 0.1$ (i.e. in steps of 10% composition) and $\Delta c = 0.02$ (i.e. in steps of 2% composition). The internal saturation induction of Cu-Ni alloys was calculated from these by the method described by the present author and Fedorchenko (Ref. 2) from the formula:

$$B = \sum_{(i)} \vartheta_i B_i \quad (2)$$

and the electrical conductivity was determined by the method due to the same authors (Ref. 3) from the formula:

$$\lambda = \left(\sum_{(i)} \vartheta_i \lambda_i^{1/8} \right)^3 \quad (3) .$$

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S/126/61/012/004/017/021

E193/E383

Application of

In formulae (2) and (3) y_i denotes a portion of volume corresponding to the i -th concentration-distribution interval, B_i is the internal saturation induction of the i -th alloy, λ_i denotes the electrical conductivity of the i -th alloy and B and λ , respectively, are the average values of internal saturation induction and electrical conductivity.

In addition, B and λ were calculated with the aid of concentration distributions determined by the method due to O.I. Raychenko (Ref. 5 - Ukr.fiz.zhurnal, 1958, 3, no. 3, 408). The results are reproduced in Tables 1, 2 and 3. The character of the concentration-dependence of B and λ should be taken into account in assessing the data in Tables 1-3. B of pure Ni at room temperature is approximately 6 000 gauss and with increasing Cu content it decreases almost linearly, reaching

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S/126/61/012/004/017/021

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Application of

zero at approximately 43% Cu. Hence, B of the 20% Ni - 80% Cu alloy should be more sensitive to the character of the concentration distribution than B of the 80% Ni - 20% Cu alloy. The effect of composition on λ is most pronounced in the 0 - 20% Ni range, less in the 80 - 100% Ni range and least in the 20 - 80% range; the variation of average λ of the 20% Ni - 80% Cu alloy will, therefore, be mainly governed by redistribution of the volume portions ψ_1 with the concentration

distribution in the 0 - 20% Ni range. It follows that the degree of agreement between the calculated and actual concentration-distributions can be best assessed from the data on the internal induction of the 20% Ni - 80% Cu alloy. The results given in Table 1 show that the method described in Ref. 1 gives calculated results in closer agreement with experiment than the method described in Ref. 5. Comparison between the calculated and experimental data given in Tables 2 and 3 shows that in approximately 50% of the cases, the method described in Ref. 1 gave better results and, in 50% of the cases, less accurate results. General correlation of the results obtained by the Card 5A0

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S/126/61/012/004/017/021
E193/E383

Application of

method described in Ref. 1 with the experimental data shows that the difference in respect of the induction of the 20% Ni - 80% Cu alloy approaches 30%, the corresponding figure for the method described in Ref. 5 being 100%. The difference between the calculated and experimental values of induction of the 80% Ni - 20% Cu alloy is 21% for the method described in Ref. 1 and 20% for the method described in Ref. 5. The corresponding difference in respect of the electrical conductivity of the 20% Ni - 80% Cu alloy is 8 and 26% for the methods described in Ref. 1 and 5, respectively. X

[Abstracter's note: this is an abridged translation.]

There are 3 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet bloc. The English-language reference mentioned is Ref. 4 - Selwood, O.W. Jane Nash. TASM, 1945, 35, 609.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov
AN UkrSSR (Institute of Powder Metallurgy and
Special Alloys of the AS UkrSSR)

SUBMITTED: January 27, 1961 (initially)
April 15, 1961 (after revision)

Card 6/10

LUK'YANCHIKOV, ~~Artam~~ Stepanovich, inzh.; RAYCHENKO, A.I., kand.tekhn.
nauk, retsenzent; AFONINA, G.P., red.izd-va; BEREZOVYY, V.N.,
tekhn. red.

[Gas roasting of iron ores]Gazovyi obzhig zheleznykh rud. Kiev,
Gostekhizdat, USSR, 1962. 89 p. (MIRA 16:2)
(Iron ores) (Ore dressing)

RAYCHENKO, A. I.

Comparison of two methods of calculating concentration distributions.
Porosh. met. 2 no.2:44-48 Mr-Apr '62. (MIRA 16:5)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Powder metallurgy)

39924

S/226/62/000/003/002/014
1003/1203

1/600

AUTHOR: Raychenko, A. I.

TITLE: Study on the mutual diffusion of a two-component mixture consisting of powders with different degrees of dispersion

PERIODICAL: Poroshkovaya metallurgiya, no. 3, 1962, 10-16

TEXT: This method based on Raichenko, A. I. in "Poroshkovaya metallurgiya" no. 2, 35, 1961, and Raichenko, A. I. and Belitskaya, G. F. in "Poroshkovaya metallurgiya" no. 3, 11, 1961, gives the concentration distribution for Cu-Ni powders. The comparison of a number of empirically obtained histograms with those calculated for the same conditions presumes a higher diffusion mobility of atoms for the materials investigated, than C. J. Smithells in Metals Reference Book., II, London, 1955. The formation of conglomerates of nickel particles is assumed, also that at annealing temperatures higher than 700°C a certain ordering takes place inhibiting the homogenizing process in real alloys, as compared with the homogenizing which would take place if the Cu-Ni alloy were an ideal solution. There are 5 figures and 1 table.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: August 23, 1961

Card 1/1

S/226/63/000/001/002/016
E039/E435

AUTHOR: Raychenko, A.I.

TITLE: Criterion of the degree of homogenization of a two component alloy

PERIODICAL: Poroshkovaya metallurgiya, no.1, 1963, 13-16

TEXT: A quantitative criterion is proposed for the degree of homogenization of a two-component powder alloy - "the moment of concentration distribution" relative to the average concentration.

$$\mu = \sum_i \delta_i \cdot \gamma_i \quad (2)$$

where γ_i is the volume of the fraction of the alloy which comes in the i-th concentration range (in fractional units);
 $\delta_i = |c_i - c_m|$ is the absolute value of the concentration scatter.
 It is shown that with equal boundary conditions the "moment" is a single values monotonic function of the degree of annealing which decreases to zero in the limit. Values of the "moment" μ are calculated for powdered Cu-Ni alloy for successive degrees of annealing using the methods described by O.I.Raychenko (UFZh. III, Card 1/2

Criterion of the degree ...

S/226/63/000/001/002/016
E039/E435

1958, 408; Poroshkovaya metallurgiya, no.2, 1961, 35).
 μ varies from ~ 0.2 for 15 minutes annealing to ~ 0.01 (for
 $\Delta c = 0.02$) or ~ 0.08 (for $\Delta c = 0.1$) for 8 hours 42 minutes
annealing. Δc refers to the histogram step. Its effect on
the results is discussed. There are 2 figures and 1 table.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov
AN USSR (Institute of Powder Metallurgy and Special
Alloys AS UkrSSR)

SUBMITTED: January 11, 1962

Card 2/2

L 18119-63

ENP(q)/EWT(m)/BDS

AFFTC/ASD JD

S/0181/63/005/007/1982/1987

ACCESSION NR: AP3003899

AUTHOR: Raychenko, A. I.

TITLE: Displacements of ions in a heteropolar crystal because of natural vibrations

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 1982-1987

TOPIC TAGS: ion, displacement, heteropolar crystal, natural vibration, Na, K, Cl, reaction rate, multiatomic molecule, frequency, mean square displacement

ABSTRACT: The author employs harmonic approximation to examine crystals whose ions are in movement through superposition of harmonic vibrations. He uses a device for obtaining the constants of the reaction rate in gases that consist of multiatomic molecules (N. B. Slater, Proc. Roy. Soc., A194, 112, 1948), and he succeeds in deriving an expression for the frequency of displacement of the ions at any arbitrary distance and under conditions of high temperatures. The parameters of the formula. thus obtained are expressed through known or easily determinable values. He also computes the mean square displacement of ions in crystals of NaCl and KCl for a number of low, intermediate, and high temperatures. At

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ACCESSION NR: AP3003899

rather low temperatures the mean square displacement of the cation is greater than the comparable value for the anion, but at higher temperatures the reverse is true. The computed relative square displacements of ions in both NaCl and KCl crystals prove to be very much alike at the melting points. It is suggested that a criterion of fusion may be the total relative displacement. "The author expresses his thanks to G. F. Belitskaya for aid in the computations." Orig. art. has: 1 figure, 4 tables, and 17 formulas.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR, Kiev
(Institute of Powder Metallurgy and Special Alloys, Academy of Sciences, Ukrainian SSR)

SUBMITTED: 19Oct62

DATE ACQ: 15Aug63

SUB CODE: PH

NO REF SOV: 004

ENCL: 00

OTHER: 004

Card 2/2

RAYCHENKO, A.I.

Problems connected with the continuous extrusion of powder
tubes. Porosh. met. 4 no.6:17-21 N-D '64. (MIRA 18:3)

1. Institut problem materialovedeniya AN UkrSSR.

ACCESSION NR: APh039645

S/0181/64/006/006/1627/1634

AUTHOR: Raychenko, A. I.

TITLE: Harmonic oscillations of atoms in a defective array

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1627-1634

TOPIC TAGS: harmonic oscillation, atomic defect, frequency, continuous spectrum, perturbation theory, wave function

ABSTRACT: The author obtained formulas for the shift in the natural frequency of oscillations in the quasicontinuous spectrums of atomic arrays using the degenerate perturbation theory of I. M. Lifshits (ZhETF, 17, 1076, 1947). The equilibrium position of the n -th atom in an array of a large number N of atoms is given by

$$a_n(t) = \varphi(n) e^{i\omega t}.$$

The wave function is given by $\psi(n) = A e^{-ikna}$ where A is the amplitude. The amplitude A_m could be written as

$$A_m = \begin{cases} \frac{2\gamma}{m} & (m=n) \\ -\frac{1}{m} & (m=n \pm 1) \\ 0 & (m > n+1, m \leq n-1) \end{cases}$$

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ACCESSION NR: AP4039645

The equation of motion is

$$\sum_m A_{mm} \varphi(m) - \omega^2 \varphi(n) + \sum_m A_{mm} \varphi(m) = 0,$$

$$A_{mm} = \frac{1}{m} \delta (-\delta_{n-1} \delta_{m-1} + \delta_{m-1} \delta_{n-1} + \delta_{m-1} \delta_{n-1} + \delta_{m-1} \delta_{n-1} - \delta_{m-1} \delta_{n-1}) +$$

$$+ (\omega^2 - 2 \frac{1}{m} \delta) \delta_{m-1} \delta_{n-1}; \quad (\delta = \frac{1-\gamma}{1}; \quad \epsilon = \frac{m-m'}{m}),$$

where m and m' are the original and changed masses of the atom and γ and γ' are the original and the changed elastic constants. The solution for ϕ was obtained as

$$\varphi_{(n)}^{(n)}(n) = \sqrt{n} \sum_{k=1}^n \varphi_{(k)}^{(n)} \left\{ \nu \cdot \nu \cdot \int \frac{\sum_i L_{ii}^{(n)} \varphi_{ii} d\nu}{\omega^2(n) - \omega^2(n)} - \right.$$

$$\left. - \frac{\sum_i L_{ii}^{(n)} \varphi_{ii}}{\omega^2(n)} \operatorname{ctg} \pi l_i \right\},$$

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ACCESSION NR: APH039645

where $\Lambda_n = \sum_{j=1}^N a_j L_j^{(n)} \overline{L_j^{(n)}}$,

$\alpha = 2\pi/N$, $\tau_{uj}^{(k)}$ is a normalising coefficient, ξ is the function of elip, and bars denote complex conjugates. Using Lifshitz's theory, the following expression was obtained for the normalising coefficient

$$\tau_{uj}^{(k)} = \sum_{n=1}^N a_n \left[\text{v. p.} \int \frac{\sum_{m=1}^N L_m^{(j)} \overline{L_m^{(k)}}}{\alpha^2(\sigma) - \alpha^2(u)} - \frac{\sum_{m=1}^N L_m^{(j)} \overline{L_m^{(k)}}}{\alpha^2} \text{sig} \alpha i, \right] \tau_{uj}^{(k)} = 0$$

(j = 1, 2).

The author thanks L. P. Nishnik for his helpful discussions. Orig. art. has: 32 formulas.

ASSOCIATION: Institut metallokeramiki i spetsplavov, AN UkrSSR, Kiev (Institute of Metal Ceramics and Special Alloys, AN UkrSSR)

SUBMITTED: 04 Nov 63

ENCL: 00

SUB CODE: SS, GP

NO REF SOV: 004

OTHER: 005

Card 3/3

L 7953-66 EWT(l)/EWP(a)/EWT(m)/EPP(c)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c)

ACC NR: AP5026278 JD/WW/GG

UR/0226/65/000/010/0091/0099

AUTHOR: Raychenko, A. I.

TITLE: Scattering of light by metal particles

SOURCE: Poroshkovaya metallurgiya, no. 10, 1965, 91-99

TOPIC TAGS: light scattering, metal powder, iron, nickel, copper, light reflection, refractive index

ABSTRACT: The results of a calculation of three indicatrices of the scattering of monochromatic ($\lambda = 0.668 \mu$) nonpolarized light by the metals that are often used in powder metallurgy are presented: for specular reflection, for Lambert's diffuse reflection, and for Seeliger's diffuse reflection. This will make it possible to investigate the state of the surfaces of powder particles. In addition to the scattering of light with $\lambda = 0.668 \mu$ by iron, the scattering indicatrices of light with three other wavelengths (0.395, 0.440, 0.589) were investigated for the particles of two other metals (Ni, Cu) respectively). The calculations were chiefly based on the tables of reflection coefficients given by Prishivalko (Otrazheniye sveta ot posloshchayushchikh sred, Izd-vo AN BSSR, Minsk, 1963). It is shown that in the presence of both specular and diffuse reflection, at $\lambda = 0.395$ and 0.589μ , scattering by iron particles into the posterior hemisphere of the scattering indicatrix increases. For nickel (specularly reflecting particles) the corresponding scattering indicatrix

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ACC NR: AP5026278

has a characteristic shape with a forward bulge. As for copper, here the distinguishing feature is the increase in refractive index n' and decrease in absorptive index n'' with increasing λ . (For iron, by contrast, both n' and n'' increase within this portion of the spectrum, and the same applies to nickel.) It appears that when the scattering angle θ lies within the range of 50-180°, the effect of n'' "wins," whereas if $\theta < 50^\circ$ the increase in n' exerts a greater influence. It is further shown that the nature of light scattering -- and hence also the state of the surface of the investigated metal-powder particles -- can be determined without having to measure the entire scattering indicatrix. To this end, it may suffice to correlatively measure the rays of the indicatrix in two or three directions; a corresponding formula is derived. Orig. art. has: 9 figures, 2 tables, 4 formulas.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute for the Study of Materials, AS UkrSSR)

SUBMITTED: 20Aug64

ENCL: 00

SUB CODE: OP, MM

NO REF SOV: 003

OTHER: 002

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2/2
Card

RAYCHENKO, A.I.

Problems connected with pipe extrusion from a viscoplastic
mixture. Porosh. met. 5 no.8:23-34 Ag '65. (MIRA 18:9)

1. Institut problem materialovedeniya AN UkrSSR.

RAYCHENKO, A.I.

Determining the state of metal powder surfaces by the scattering
of light. Porosh. met. 5 no.9:69-75 S '65. (MIRA 18:9)

1. Institut problem materialovedeniya AN UkrSSR.

L 49040-65 EWT(1)/EWT(m)/T/EWP(t)/REC(b)-2/EWP(b) P1-4 IJP(e) GG/JD

ACCESSION NR: AP5006898

S/0181/65/007/003/0877/0880

AUTHOR: Raychenko, A. I.

TITLE: Displacements of electron shells of ions in NaCl crystals during thermal oscillations

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 877-880

TOPIC TAGS: sodium chloride crystal, electron shell displacement, electron diffraction, x ray diffraction

ABSTRACT: This is a continuation of earlier work (FTT v. 5, 1962, 1963) dealing with the rms fluctuations of the displacements of nuclei in thermal oscillations of ions in NaCl and KBr crystals. In the present work the author derives, using the dynamical theory, expressions for the rms fluctuations of the displacements of electronic charges of ions in NaCl crystal during thermal oscillations. It is pointed out that whereas displacements of nuclei are of importance in studies of the Mossbauer effect and neutron diffraction experiments, they cannot be useful for x-ray and electron diffraction. Comparison with the x-ray data of R. W. James (Optical Principles of Diffraction of X-rays, Bell, London, 1948) makes it possible

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ACCESSION NR: AP5006898

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to estimate those parts of the electronic charges of the ions, whose displacement affects the Debye-Waller factor of the intensity of the x-ray interferences. Unlike fluctuations of the nuclear displacements, fluctuation of electron-charge displacements satisfy the inequality $s_{\text{cation}}^2 > s_{\text{anion}}^2$ (g - displacement fluctuation) at all temperatures. The fluctuations increase almost linearly with temperature, except at very low temperatures. "I thank Yu. A. Panfilov for help with the calculations." Orig. art. has: 1 figure and 13 formulas.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR, Kiev (Institute for Problems of Materials Research)

SUBMITTED: 02Jun64

FCL: 00

SUB CODE: 88

NR REF SOV: 002

OTHER: 002

Cord 2/2

L 45300-66 ENT(d)/EWP(e)/ENT(m)/EWP(w)/EWP(t)/ETI/EWP(k) IJP(e) JD/EM
ACC NR: AP6020957 SOURCE CODE: UR/0226/66/000/006/0011/0012

AUTHOR: Raychenko, A. I.; Kostornov, A. G.

ORG: Institute for Problems in the Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN USSR)

TITLE: Rheological investigations of a plasticized powder charge

SOURCE: Poroshkovaya metallurgiya, no. 6, 1966, 11-12

TOPIC TAGS: powder metal, viscosimeter, plasticized powder charge, plastic viscosity

ABSTRACT: Rheological investigations have shown that a plasticized powder charge behaves like a viscoplastic body under conditions of flow from a capillary viscosimeter. It has been found that, due to drying, the yield point and plastic viscosity increase with the increase in density of the charge. The values of plastic viscosity

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L 45300-66

ACC NR: AP6020957

have been estimated. Orig. art. has: 3 figures and 1 table. [Based on authors' abstract] [NT]

SUB CODE: 11/ SUBM DATE: 28Nov65. ORIG REF: 002/

Card

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ACC NR: AP6036897 (1) SOURCE CODE: UR/0226/66/000/011/0039/0042

AUTHOR: Raychenko, A. I.

ORG: Institute for Problems in Science of Materials AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Brightness coefficients of inhomogeneous metal-powder alloys

SOURCE: Poroshkovaya metallurgiya, no. 11, 1966, 39-42

TOPIC TAGS: brightness coefficient, powder alloy homogenization, copper nickel powder

ABSTRACT: The brightness coefficient has been measured for a number of copper-nickel powder alloys at various stages of homogenization. The brightness coefficient always increases at the initial stages. The comparison of brightness coefficients was calculated using the concentration relationships of the brightness coefficients and the computed concentration distributions. A definite agreement was noted between the experimental and computed data. The author thanks L. O. Zhenni-Mayskoy for his help in preparing the study. Orig. art. has: 5 figures.

[Based on author's abstract]

[NT]

Card 1/1 SUB CODE: 11/3UBM DATE: 09Dec65/ORIG REF: 003/

ACC NR: AP7000517 SOURCE CODE: UR/0048/66/030/011/1755/1759

AUTHOR: Blokh, Ya. L.; Dorman, L. I.; Kurnosova, L. V.; Razorenov, L. A.; Raychenko, L. V.; Suslov, A. A.; Fradkin, M. I.

ORG: none

TITLE: A study of time changes of nuclear flux in primary cosmic radiation on Elektron-2 and Elektron-4 satellites /Paper presented at All-Union Conference on Physics of Cosmic Rays held in Moscow from 15 to 20 November 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1755-1759

TOPIC TAGS: primary cosmic ray, cosmic ray measurement, cosmic ray intensity, *nucleonic satellite, nuclear flux, neutron flux*

ABSTRACT: Some results of a study of primary cosmic radiation conducted using the Elektron-2 and Elektron-4 satellites are given. An integral Cherenkov counter was placed in each satellite to measure fluxes of nuclei with energies greater than 600 Mev/nucleon. Those nuclei belonging to groups $Z \geq 2$, $Z \geq 5$, $Z \geq 15$ were measured by the Elektron-2, and those of group $Z > 20$ by the Elektron-4. Average flux values measured for the above groups of nuclei relative to the average flux values obtained during July 1964 are given in Fig. 1. The above data covers the period from 30 Jan 1964 through 9 Feb 1965. The fluxes

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ACC NR: AP7000517

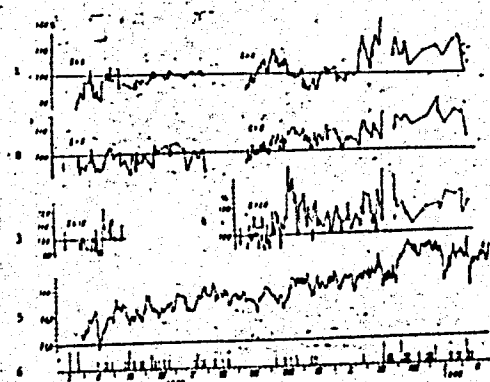


Fig. 1. Relative values of primary cosmic ray flux obtained by Elektron-2 and Elektron-4 satellites and by a ground station

1, 2, 3, 4 - Relative fluxes of nuclei with $Z \geq 2$, $Z \geq 5$, $Z \geq 15$ (right-hand graph) and magnitudes of statistical error of the mid-day values; 5, 6 - cosmic flux values obtained by the neutron monitor, and flux caused by chromospheric flares (the sizes of vertical lines correspond to flares of particles 1, 1+, and 2) registered at the Climax ground station.

Card 2/3

ACC NR: A27000517

measured at midday by the satellites are in close correlation with those measured by the ground stations for quiet ground conditions. It is noted that nuclear flux increased by a factor of 1.7—2 during the period from 1959 to 1964. During the same period the flux registered by a neutron monitor at the Climax ground station increased by about 20%. During 1964—1965 as was anticipated the nuclear flux increased by about 15% for nuclei with $Z \geq 2$ and $Z \geq 5$. The accuracy of measurements of the flux increase of nuclei with $Z > 20$ during the flight of the Elektron-4 satellite was impaired by several rises in flux and by significant statistical errors. Orig. art. has: 3 figures.

[WA-75]
[IV]

SUB CODE: 04, 1820/
OTH REF: 007

SUBM DATE: none/

ORIG REF: 007/

Card 3/3

Reel # 459
Raychenko, L.V.

END